AMENDMENTS TO THE CLAIMS

1-28. (Canceled)

29. (New) An implantable amplifying circuit for recording signals generated by a nerve and detected by a pair of electrode wires in contact with the nerve, the amplifying circuit comprising:

a preamplifier having a pair of inputs for receiving signals from electrode wires, the preamplifier including a differential pair of input MOSFET transistors having a low input current that serves as a first input protection circuit to limit current flow through the nerve and the electrode wires;

a common signal line that is coupleable to the nerve;

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a second input protection circuit disposed in series with the common signal line including a parallel resistor/capacitor combination to limit current flow through the nerve and the common signal line.

30. (New) The implantable amplifying circuit of claim 29, wherein the preamplifier includes a pair of bipolar transistors and a current mirror that are driven with differential outputs of the MOSFET input transistors and produces a single-ended nerve output signal.

31. (New) The implantable amplifying circuit of claim 29, wherein said second input protection circuit comprises a resistor in parallel with a series of one or more capacitors, said parallel pair connected between the common signal line connectable to the nerve and a reference voltage terminal that provides a virtual ground terminal in respect of said implantable amplifying circuit.

32. (New) The implantable amplifying circuit of claim 29, further comprising:

at least one amplifier stage connected to an output at the preamplifier that produces an amplified nerve output signal.

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33. (New) The implantable amplifying circuit of claim 32, further comprising a DC restoration circuit having an input connected to an output of said amplifier stage.

34. (New) The implantable amplifying circuit of claim 32, wherein said amplifier stage is a band-pass amplifier.

35. (New) The implantable amplifying circuit of claim 34, wherein said band-pass amplifier comprises a plurality of high-pass filters and a plurality of low-pass negative-feedback amplifiers alternatingly cascaded with said high-pass filters.

36. (New) The implantable amplifying circuit of claim 34, wherein said band-pass amplifier is a programmable-gain band-pass amplifier.

37. (New) The implantable amplifying circuit of claim 35, wherein each low-pass negative-feedback amplifier comprises:

a plurality of series-connected resistors forming a resistor string connected between an output terminal and a voltage reference terminal of the low-pass negative-feedback amplifier; and

a plurality of selectable switches wherein an end of each selectable switch is connected to an input terminal of the low-pass negative-feedback amplifier and another end of each selectable switch is connected to a nodal point between the resistors in the resistor string.

38. (New) The implantable amplifying circuit of claim 35, wherein each low-pass negative-feedback amplifier comprises an output stage in a Darlington configuration operating as a class AB amplifier wherein a bias circuit supplying bias to the output stage also carries signal current.

39. (New) The implantable amplifying circuit of claim 36, wherein said programmable-gain band-pass amplifier has a frequency range between approximately 900 Hz and 9 kHz for 5 μV_{peak} input neural signals.

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40. (New) The implantable amplifying circuit of claim 29, wherein the implantable amplifying circuit has an equivalent input noise at 3 kHz that is lower than 0.6 μV_{rms}.

41. (New) The implantable amplifying circuit of claim 29, wherein the implantable amplifying circuit has a CMRR higher than 90 dB at 250 Hz.

42. (New) The implantable amplifying circuit of claim 29, wherein the implantable amplifying circuit has a power consumption lower than 12 mW.

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43. (New) The implantable amplifying circuit of claim 29, wherein the preamplifier has an input DC current that is lower than 1 nanoamp.

44. (New) The implantable amplifying circuit of claim 29, wherein said implantable amplifying circuit is powered by an RF telemetry link.

45. (New) The implantable amplifying circuit of claim 29, wherein the implantable amplifying circuit has a PSRR higher than 85 dB at 3 kHz.

46. (New) The implantable amplifying circuit of claim 29, wherein said implantable amplifying circuit is powered by a battery.

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